CHAPTER 4

Building and Sustaining a Culture of Safety

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INTRODUCTION

Despite high expectations, healthcare outcomes fall short of desired results. The Institute of Medicine’s landmark study To Err Is Human (IOM 1999) estimated that 2.9 to 3.7 percent of inpatient deaths result from medical error. Annually, more deaths result from medical error than from breast cancer, AIDS, or motor vehicle accidents. A review of 6,712 patients’ medical records for 439 quality indicators demonstrated that participants received 55 percent of recommended care (McGlynn et al. 2003).

Although the IOM study revealed that human beings are prone to error, studies outside of healthcare have revealed significantly lower human error rates. For example, in commercial aviation, the risk of a fatal event is less than one per million flights (Barker and Madonna 2008). The purpose of this chapter is to demonstrate how strengthening organizational safety culture improves healthcare outcomes.
CASE PRESENTATION

Sentara Healthcare is an integrated healthcare system in southeastern Virginia comprising eight acute care hospitals with a total of 1,911 beds, nine outpatient care facilities, seven nursing centers, three assisted living centers, nine advanced imaging centers, and about 380 primary care and multispecialty physicians. Frustrated by the pace of change, one of the authors (Gary R. Yates, MD, chief medical officer for Sentara Healthcare) hypothesized that the missing piece was a stronger organizational culture focused on patient safety (Yates et al. 2004). To test his hypothesis, he partnered with Performance Improvement International because of their reputation for safety improvement in the nuclear power and airline industries.

In 2002, they launched the Sentara Safety Initiative at Sentara Norfolk General Hospital (SNGH), a 543-bed, level I trauma center located in Norfolk, Virginia. A baseline assessment of adverse events identified the principal sources of errors: inadequate communication, inattention to detail, noncompliance with policy, and failure to recognize high-risk situations and use error-reduction techniques. They implemented four strategies to promote the practice of safe behaviors (McCarthy and Blumenthal 2006):

1. Expectation setting: They developed three sets of behavior-based expectations (BBEs) linked to techniques for error prevention for all hospital staff, hospital leaders, and physicians.
2. Operational focus: They established “red rules” to focus employees’ attention on high-risk procedures that can cause harm to patients if not followed exactly (e.g., positive identification prior to any action with a patient, site verification before surgery).
3. Effective tools: They developed an enhanced root-cause and common-cause analysis process that was more timely and geared toward producing long-term, systems-oriented changes (Yates et al. 2004).

50 Getting It Done
4. Streamlined rules: They adopted an approach to simplifying policies and procedures (e.g., identifying and standardizing key steps in a checklist).

Safety Habits: Behavior-Based Expectations (BBEs)

A grassroots group of 20 employees developed staff and leadership BBEs. A separate group of 14 physicians and two nurses developed the physician BBEs by adapting proven error-management tools and techniques from other high-risk industries to fit the healthcare environment (McCarthy and Blumenthal 2006):

• Pay attention to detail using the mnemonic STAR (Stop, Think, Act, and Review) as an error prevention tool to focus attention on tasks and decrease skill-based errors.
• Communicate clearly by using error prevention tools: reading/repeating back, SBAR (Situation, Background, Assessment, Recommendation), and clarifying questions.
• Have a questioning attitude: Stop actions when you are unsure about their safety and use the “verify and validate” error prevention tool.
• Hand off effectively using a “five P” checklist to ensure that all elements of a successful transfer are followed: patient/project, plan, purpose, problems, and precautions.
• Never leave your wingman: Use the error prevention process of peer checking and peer coaching when appropriate (e.g., staff are empowered to stop anyone violating a red rule, such as someone interrupting a nurse who is obtaining patient medication from the dispensing system).

Expected physician behaviors include the use of a coordinating physician in the care of patients and clear physician-to-physician communication in consultations. Sentara also identified individual physician safety champions at each facility. Champions include...
medical executive committee leaders; hospitalists; and emergency room, radiology, and other physicians who demonstrate a passion for change and improved patient care. Each of these physicians has agreed to participate in additional in-depth safety training. As a result, these physicians are using the same safety habits the staff is using and are providing positive feedback and reinforcement to frontline staff using those safety behaviors.

Leadership actions include responsibility for implementing the Sentara Leadership Method to build accountability and sustain change (Yates et al. 2005). This method incorporates a bundle of behaviors that, when performed consistently, influence and change staff behavior:

1. Daily safety check-ins or team huddles to raise awareness of potential safety issues over the next 24 hours and mitigate any identified safety risks.

2. Rounding to influence:
   - Leaders at all levels make observations and ask questions about safe behaviors during daily walk rounds, such as “Who is your sickest patient?” and “What triggers would alert you to contact the medical response team?”
   - While rounding, leaders influence desired behaviors by asking questions that focus on specific initiatives—for example, “We’ve been working on improved communication using the SBAR tool. Are you familiar with that tool? Can you tell me what it is and when you might use it?”
   - Leaders set expectations, provide education, observe behavior, provide instant positive feedback and constant reinforcement, and refer to the code of conduct disciplinary process when appropriate.

3. Use of level I and level II action plans: A level I action plan outlines the high-level actions needed to effect change. A level II action plan outlines the specific actions steps under each of the high-level actions needed to operationalize the plan. These
plans sustain desired behaviors by using control loops that measure the current state of a process and compare it to the desired state and by using action plans that specify the problem owner and sponsor, desired outcomes, and steps that must be taken to achieve the desired outcomes.

Trained observers from the hospital’s clinical effectiveness department use validated tools adapted from other high-risk industries to ensure that critical safety junctures, such as shift change reports, handoff communications, and pre-procedure briefings, are handled appropriately. Their observations form the basis for measuring overall progress on safety habits through a real-time behavior-based monitoring system.

Outcomes Measurement

Metrics monitored to ensure that the right behaviors are encouraged, taught, and reinforced include

- leading measures that form a culture index based on regular employee culture surveys;
- real-time measures that include observational data on specific behaviors (including safety habits) for error prevention, a predictive error rate, and the status of improvement recommendations; and
- lagging measures that include adverse events and errors (e.g., patient falls, pressure ulcers, wrong-site procedures, retained foreign objects, patient identification errors, and serious medication errors), nosocomial infections and other undesirable clinical outcomes, employee injury and illness rates, losses incurred through malpractice claims, pharmacy interventions, and progress on selected high-impact safety improvement projects.
Progress is evaluated monthly and reported to the board quarterly. Forty percent of variable executive compensation and 30 percent of the annual employee gain-sharing bonuses are based on achievement of quality and safety goals.

**Results**

Staff use of expected communication behaviors (such as repeating back and asking clarifying questions) increased by 42 percent. Ventilator-associated pneumonias decreased by 93 percent (6.15 to 0.42 per 1,000 ventilator days) from January 2002 through December 2009 (Exhibit 4.1), and the device-associated bloodstream infection rate fell 89 percent (3.68 to 0.42 per 1,000 central line days) from January 2002 through December 2009 (Exhibit 4.2).

Additionally, the rate of symptomatic catheter-associated urinary tract infections in the critical care units decreased by 66 percent (1.86 to 0.60 per 1,000 foley catheter days) from January 2007 through December 2009 (Exhibit 4.3).

Hand hygiene audits began in selected critical care units in 2001. Periodic “high risk” area audits were also performed but not included in the critical care data. All the hospitals in Sentara Healthcare joined the hand hygiene auditing process for critical care in 2005. In 2006, all facilities focused on a standardized system to increase facility-wide hand hygiene compliance rates. The Total House Hand Hygiene compliance process, which included both physicians and staff, was implemented in 2007. Compliance with proper hand hygiene increased to 96 percent by December 2009 (Exhibit 4.4).

As a result of focused attention on a stubborn clinical challenge, Sentara has implemented performance improvement teams to reduce inpatient falls using level I and level II action plans to build a structure for action and accountability by involved clinicians (Exhibit 4.5).
Exhibit 4.1 Rate of Ventilator-Associated Pneumonia, January 2002 Through December 2009

Exhibit 4.3 Rate of Catheter-Associated Urinary Tract Infections in the Critical Care Units, January 2002 Through December 2009

Exhibit 4.4 Hand Hygiene Compliance Rates, 2001 Through 2009
Exhibit 4.5 Inpatient Falls with Injury per 1,000 Patient Days: 2003 Versus 2009

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Number of Inpatient Falls with Injury</th>
<th>Patient Days</th>
<th>Inpatient Falls with Injury per 1,000 Patient Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>SH (excluding one hospital that had just joined SH)</td>
<td>317</td>
<td>321,467</td>
<td>0.99</td>
</tr>
<tr>
<td>215</td>
<td>374,617</td>
<td>0.57</td>
<td></td>
</tr>
</tbody>
</table>

Percentage reduction in inpatient falls with injury from 2003 to 2009: 42%

Note: Psychiatry and rehabilitation units are excluded. For consistency, the 2009 falls with injury definition is used for both years.

This effort has been associated with a 55 percent reduction in harmful events per 10,000 adjusted patient days from January 2003 through April 2010 at SNGH (Exhibit 4.6). As a result of the initial outcomes, the behavior-based approach to improving patient safety has been expanded system-wide in Sentara Healthcare’s hospitals and other sites of care and adapted locally to each institution.

Placing safety as a core value at Sentara, the organization hired two system-level directors for the Patient Safety Initiative and developed combined patient safety/accreditation specialist roles. This model remains in place, with six full-time equivalents across the system dedicated to safety. (Two hospitals have full-time safety specialists, and four hospitals have a 0.5 FTE for safety combined with a 0.5 FTE for accreditation).
The role of the safety specialist is to facilitate and drive various system and local safety initiatives. Each hospital also has a safety coach program. The safety coaches are employees who volunteer or are chosen by their department manager to help embed the safety behaviors and error prevention tools in the day-to-day operations of the department. Their managers empower them to actively coach employees and, as needed, physicians in the use of safety behaviors.

Quality and safety will continue to be important factors in implementing healthcare reform initiatives because the clear consensus is that future reimbursement should be based on outcomes and value, not volume. The ability of an organization to document a proven successful record in sustained quality and safety improvement will be necessary to meet future reporting requirements and, eventually, to be paid a significant portion of available reimbursement dollars. All future payment mechanisms will focus on paying for outcomes.
CASE ANALYSIS

Sentara’s experience models the idea that cultural change is promoted by embedding specific tactical safety improvement processes and activities in a larger organizational strategy. Organizational culture drives behaviors, and behaviors drive outcomes. The process also works in reverse, in a self-reinforcing circular fashion. Hence, an organization can use the cycle of behavioral observation, coaching, and feedback as a form of social engineering to promote the practical learning of new safety-enhancing skills and behaviors that, over time, can become internalized norms of a safety culture (McCar thy and Blumenthal 2006).

Poorly designed programs fail to consider behavior within the context of systems and focus on financial rewards rather than genuine employee involvement and ownership. In a well-designed program, hazards should be addressed as close to their source as possible. For example, hearing protection should not be promoted as a safe behavior when the source of noise can be eliminated.

Through a multifaceted approach, Sentara has achieved a balance for meeting safety goals by incorporating individual behaviors, systems design, and organizational factors. Five elements of Sentara’s approach merit further consideration:

1. Strategies originating in other industries were evaluated and adapted to the healthcare setting.
2. Behavior-based expectations, now identified as “safety habits,” were implemented in concert with organizational capability to conduct rigorous systems analysis.
3. Behavioral observation occurred within a framework that eschews blame for honest mistakes and encourages staff to report errors for purposes of organizational learning.
4. A strong causal analysis process identifies root causes to prevent recurrence of events. Although human failure contributes to all events, good causal analysis digs deeper to determine what factors led to that failure. Often those factors
are underlying system issues. If healthcare organizations do not resolve the underlying system issues driving human error, they are at risk of experiencing déjà vu events.

5. Additionally, lessons learned from each serious adverse event are published on the Sentara intranet and available to managers throughout the organization. Hospitals respond to specific action steps and report their progress. This approach provides all Sentara facilities opportunities to learn from one another and reduce the potential to repeat similar mistakes.

LESSONS LEARNED

The following elements are essential to building and sustaining a culture of safety:

- Consensus at all levels that the status quo is unacceptable and that systematic change needs to occur
- Alignment of reward and recognition programs, human resources policies, and financial incentives
- Prioritization of tasks, especially in the early stages, to prevent fatigue, saturation, and apathy
- Strong local involvement to ensure ownership and buy-in at the front lines, where patient–provider interactions take place
- Continuous reinforcement of desired behaviors
- Constant vigilance to discourage resting on laurels and slipping back into previous behavior patterns (Deemphasizing the drive toward safer patient care fosters complacency and increases the rate of events causing harm to patients.)
- Metrics that distinguish between process activity and improved outcomes
- Effective accountability systems to ensure that error-preventive behaviors are demonstrated 100 percent of the time
Key Concepts 4.1: Steps to Building and Sustaining a Healthcare Safety Culture

• Conduct a baseline survey of adverse events and near misses over the past year.
• Look for patterns and common causes that suggest recurring systems issues.
• Gather employees and medical staff to review the data and brainstorm improvement strategies; have physicians present the data to the medical staff.
• Discuss and evaluate safety habits that might decrease adverse events and near misses.
• Recognize and seize the opportunity to embed the safety behaviors as error prevention behaviors in all nonclinical environments to improve overall business and operations performance.
• Explore what leading, real-time, and lagging metrics might track progress toward goals.
• Tie the achievement of goals to public recognition, annual performance reviews, medical staff reappointment, and gain-sharing bonuses.
• Present results in public forums to colleagues who work in other locations.
• Repeat the process; developing and maintaining a healthcare safety culture is an iterative journey rather than a destination.

SUGGESTED READING


REFERENCES

References appear at the end of the book on page 246.